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SAMP24_WE **Solid Phase Extraction of Fluoroquinolone Antibiotics from Wastewaters – Assessment of Different Commercial Sorbents**

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Abstract: Microbial degradation of fluorinated pharmaceuticals during wastewater treatment processes remains inadequate in most situations. Due to incomplete elimination, these residues are continually being introduced into the aquatic environments in which they settle throughout time since many of them are resistant to degradation. Fluoroquinolone antibiotics due to its persistence and implication on resistant-bacteria development, pose special interest in environmental analysis. Due to their zwitterionic characteristics, the extraction/pre-concentration process of fluoroquinolones prior analyses is an unquestionable challenge. This work compares the solid phase extraction efficiency of four fluoroquinolones (Ofloxacin, Norfloxacin, Ciprofloxacin and Moxifloxacin) from wastewater effluents by different commercial sorbents. Prior to wastewater analysis, preliminary tests were conducted in distilled water with a larger number of sorbents. Different experimental protocols and sorbents, namely OASIS® HLB, OASIS® WAX, OASIS® WCX (500 mg) and the molecularly imprinted polymer SupelMIP™ were applied to wastewater samples collected from a municipal wastewater treatment plant from the north of Portugal. The extracts were analyzed by a HPLC with Fluorescence Detection validated method using a Luna PFP (2) 3µm column. Despite good results obtained with the molecularly imprinted polymer in distilled water, these cartridges did not perform efficiently when applied to wastewater effluents, probably due to the sample high complexity especially since their specific design for biological samples. Regarding OASIS® considered sorbents; HLB 500mg and WAX 500mg presented the best recovery rates of the four studied antibiotics, between 84-75% and 64-94%, respectively. Although the recoveries achieved were not that dissimilar between the two mentioned sorbents, chromatograms of WAX extracts appear much cleaner in the antibiotics retention times while chromatograms of HLB extracts clearly show the presence of strong polar substances, probably matrix humic and fulvic acids, that behave as resilient interferences in the analysis, disturbing a proper identification of target compounds and reducing chromatographic resolution.